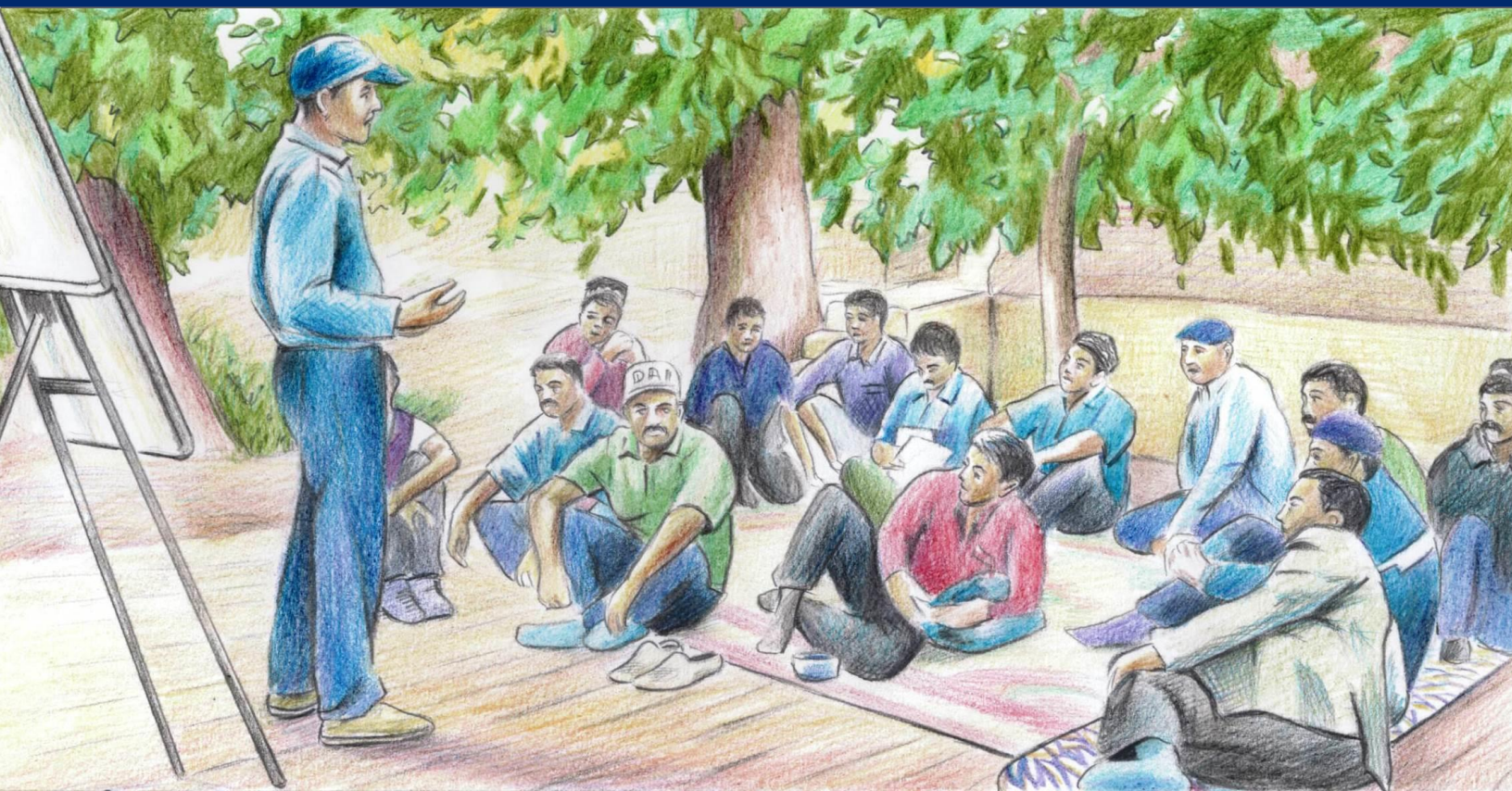




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USAID FAMILY FARMING PROGRAM TAJIKISTAN

**GUIDE FOR AN IRRIGATION SERVICE PLAN PREPARED BY A WATER
USERS ASSOCIATION FOR ITS MEMBERS**



JULY 1, 2014

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USAID FAMILY FARMING PROGRAM

GUIDE FOR AN IRRIGATION SERVICE PLAN PREPARED BY A WATER USERS ASSOCIATION FOR ITS MEMBERS

Program Title:	USAID Family Farming Program for Tajikistan
Sponsoring USAID Office:	Economic Growth Office
Chief of Party:	James Campbell
Contracting Officer	Kerry West
Contracting Officer Representative	Aviva Kutnick
Contract Number:	EDH-I-00-05-00004, Task Order: AID-176-TO-10-00003
Award Period:	September 30, 2010–September 29, 2014
Contractor:	DAI
Subcontractors:	Winrock International
Date of Publication:	July 1, 2014
Author:	Douglas Vermillion

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GUIDE FOR AN IRRIGATION SERVICE PLAN PREPARED BY A WATER USERS ASSOCIATION FOR ITS MEMBERS

OVERVIEW

The purpose of this Guide is to provide a practical, easy-to-implement approach for the Water Users Association ('Association') to follow in order to prepare a practical Irrigation Service Plan (ISP) that can be implemented with the resources available to the water users. The purpose of an ISP is to detail all the actions that an Association needs to accomplish and costs to be borne to deliver properly the water to its members and authorized water users¹.

When a Water Users Association is established, it will take over responsibility to manage the tertiary and sometimes secondary canal level of its irrigation and drainage systems (approximately equivalent to the Kolkhoz and Sovhoz based terminology of on-farm level). It begins to overcome years of a low level of informal coordination among farmers for water management, replacing it gradually with a more systematic, receptive, reliable, efficient and equitable irrigation service to its water users. In Tajikistan, little maintenance and repair work has been done on irrigation and drainage systems from the time of the collapse of the Soviet Union until the establishment of Water Users Associations.

The purpose of this Guide is to provide a straightforward approach for the Association to follow in order to prepare a practical Irrigation Service Plan (ISP) that can be implemented with the resources available to the water users.

The ISP should include the following sections:

1. Operational definitions of satisfactory standards of performance for irrigation governance, service provision and financing;

¹ We would like to thank the generous advice and assistance from Jelle Beekma and Anvar Kamoludinov of Provision of Technical Assistance to the Government of Tajikistan in support of the revision of the Water Legislation and WUAs, funded by the EU. (contract DCI-ASIE/2012/308-208/1).

2. Operations, which are water acquisition and distribution, conveyance, application on fields, drainage and possibly flood control;
3. Maintenance and incidental repairs and improvements;
4. Institutional and managerial activities;
5. Monitoring management performance and environmental aspects;
6. Recording and reporting;
7. Budget, Irrigation Service Fee, and financial management requirements;

The ISP should be as short and concise as possible. Normally, the Association Board will prepare the ISP and have it approved in the annual Representative Assembly. The Association and its staff will be solely responsible for implementing the ISP and may monitor the outcomes.

The following are descriptions of potential items to be included in each of the above seven components of the Irrigation Service Plan.

1. OPERATIONAL DEFINITIONS OF SATISFACTORY STANDARDS OF ACHIEVEMENT FOR IRRIGATION AND DRAINAGE GOVERNANCE, SERVICE PROVISION AND FINANCING

1.1 OBJECTIVE AND SCOPE

This is a series of basic but carefully constructed statements about what the Association intends to accomplish with its Irrigation Service Plan. These are objectives that are stated in such a way that their achievement or non-achievement is measurable. These “operational definitions of satisfactory standards of achievement” serve as a guide for the rest of the ISP, in that all targets and activities are planned in such a way as to ensure that these standards are achieved.

1.2 SEVEN STEPS FOR PREPARING THIS SECTION OF THE ISP

Statements about satisfactory standards of performance should be made about each of the seven aspects of the ISP. The statements should emphasize whatever principles are of most importance to the Association, such as adequacy of water delivered, equity of water distribution, timeliness, or reliability of water delivery, good functional condition of water control structures. These statements will not need to be changed each year and may remain the same for several years. However, they should be reviewed each year while the ISP is under preparation so that Association officers can reflect on lessons learned and see how they might need to revise the statements.

An example of a statement about achievement of a satisfactory standard of performance for water provision is the following.

“Water will be acquired, distributed, and delivered to the fields of all water users in accordance with agreed allocations to each dehkan farm and respective crop and irrigation water requirements of each dehkan farm. These may be modified in an equitable manner in case of any periods of water shortage.”

Or, slightly more briefly,

Water is:

1. acquired according to crop needs;
2. distributed according to an agreed plan on basis of quantities for all off takes from pre-defined distribution points;
3. delivered to all fields in accordance with agreed allocations based on crop water and irrigation requirements and equitably adapted in case of water shortages experienced in the basin (sub)-basin;

An example of a statement about achievement of a satisfactory standard of performance for system maintenance is the following.

“All maintenance tasks agreed to be done in the Association’s Representative Assembly will be implemented in accordance with approved guidelines and all high priority repair works and improvements also agreed to be done in the Association Representative Assembly will be implemented in accordance with approved guidelines. The extent and

quality of maintenance and repair works done in the annual ISP will be at that level whereby rapid depreciation is prevented.”

Alternatively, more briefly:

Maintenance tasks are:

- 1) Carried out as per approved guidelines of the Representative Assembly;
- 2) Including all high priority repairs as agreed in the Representative Assembly;
- 3) Carried out to such a level and quality that rapid degradation is prevented;

The following is an example of a statement about achievement of a satisfactory standard of performance for meetings concerning the governance of irrigation systems.

“The Association Representative Assembly will be held within one month prior to the start of the irrigation season. Association Board of Directors meetings will be held weekly at least for the first three weeks of the irrigation season and then at least monthly till the end of the season. All other meetings, including those for the Audit Committee and Dispute Resolution Committee, will be held in a timely manner as needed.”

Alternatively, more briefly:

The following meeting will be conducted:

- 1) Representative Assembly within one month before the 15th of March (start of irrigation season);
- 2) Meetings from 15 March to 15 April on a weekly basis;
- 3) Other meetings as needed and identified by

The following is an example of a broader statement about governance in the Association.

“The Association members will learn about and follow all rules in the by-laws and Association members will approve and support implementation of the Irrigation Service Plan and payment of the Irrigation Service and Membership Fees.”

Alternatively, Association members:

- 1) Are familiar with the rules in the by-laws;
- 2) Approve the implementation of the ISP;
- 3) Support/contribute to the ISP as agreed;
- 4) Pay the Membership or Irrigation Service Fees, with annually increasing rates of payment.

The following is an example of a statement about achievement of a satisfactory standard of performance for monitoring the performance of the Association sub-system.

“The Association will monitor the following performance measures during and at the end of the irrigation season: X, Y, Z (such as water discharges at the offtake into the Association area, availability of water at tail end reaches of canals, functional condition of priority structures, etc.).”

Alternatively, the Association will regularly monitor the:

- 1) Discharges at the intake(s);
- 2) Discharges 70% downstream (or days of water flow);
- 3) Easy operation of gates in structures X, Y and Z (referring to identified key infrastructure at specific locations);

The following is an example of a statement about achievement of a satisfactory standard of performance for recording and reporting and taking the minutes of meetings.

“Minutes of meetings will be kept for all Representative Assembly, Association Executive Committee meetings and Dispute Resolution Committee meetings and approved during the following meeting. The Audit Committee will prepare a short report on its findings and recommendations to acceptable standards for the members, each year.”

In addition, the following is an example of a statement about achievement of a satisfactory standard of performance for the Budget, Irrigation Service Fee and financial management.

“The annual Association budget will identify the appropriate standard for mobilizing resources for the satisfactory standard of performance for all aspects of association governance and service provision and management activities. The Irrigation and Drainage Service Fees will cover payment of all expenses required for operations, maintenance and management support.”

1.3 OUTPUT

The output of this aspect of the ISP is agreed statements about the desired result of each of the seven aspects of the ISP. The process of formulating the statements creates common understanding and helps build commitment among officers of the Association.

2. WATER ACQUISITION, DELIVERY, AND DRAINAGE

2.1 OBJECTIVE AND SCOPE

The objective of this aspect of the ISP is to identify what functions and tasks will need to be implemented in order to ensure irrigating and draining the fields of all Association members and non-member water users in accordance with service agreements. This will include gathering information on water demand and supply over the irrigation season, crop plans of farmers, the scheduling of water acquisition, the manner of water distribution among blocks and fields, the scheduling of water delivery to individual farms, and requirements for drainage.

This section of the ISP will include a description of the Association’s service objectives. This would be a description of what kinds of water allocation, distribution, delivery and drainage targets, on a weekly basis, are to be provided to each member, and paying non-member water user, within the Association’s area of jurisdiction. Either specific dehkan farms or other field turnouts will constitute the target location points to which water will be delivered. Water may be allocated to all based on crop water requirements or based on of an equal supply per unit of farmland. It may be delivered according to a schedule agreed to at the beginning of the season or according to a schedule as farmers request it.

The precision and detail required for the ISP will vary according to such factors as abundance of water supply relative to demand (more abundance of water, less precision required) and diversity of crops grown by members (more diversity of crops, more intensive water control required).

2.2 STEPS FOR PREPARING THE ISP SECTION ON WATER ACQUISITION, DELIVERY AND DRAINAGE

In any particular river basin, the supply of water may exceed agricultural water demands or it may be less than demands. In Tajikistan, water supplies are relatively abundant, though variable over the season, inequity occurs between head, and tail reaches of many canals. Where water is relatively scarce, the plan will be based on supply constraints. Where water is relatively abundant, the plan will be based more on crop water demands. The following steps treat estimations of both supply and demand relatively equally. Encroaching climate change increasingly makes water supplies even less predictable, which in turn tends to make planting dates even harder to predict than previously. A key output of this part of the Plan is preparation of a worksheet for irrigation scheduling. An example of this can be found in **Annex 1** and below. **Annex 2** provides an example of a worksheet for recording discharges into the WUA service area.

WORKSHEET FOR IRRIGATION SCHEDULE

Name of Canal	Name of Staff Responsible	Canal Operation					Estimated Volume Supplied	Area Irrigated			Total Area Under Cultivation	Status of Water Application*
		Opening		Closing		Time of Operation		Crop 1	Crop 2	Crop 3		
		Date	Time	Date	Time							

1. This part of the ISP deals with statements about water acquisition, delivery and drainage needs, and will need estimates from the agency managing bulk water supplies about the predicted available water supply monthly from its water source (the river basin) plus average or predicted rainfall, through the forthcoming irrigation season.
2. This section should explain how, where and when water would be brought into the sub-system that is under the management responsibility of the Association.
3. This section should also include a description of the intended cropping pattern for the forthcoming season both on farms and in household gardens. This requires an agreement within the pre-season Representative Assembly or Council of Representatives about the crop plan. This should be described in terms of hectares per type of crop by stage of growth and location, each week through the irrigation season. Members and non-member water users may be required to provide this information to the Association Board by a certain date in December or early January.

This is tentative and may need to be adapted based on of the rainfall and snow experienced during the winter until early March. Each crop and each stage of growth will have different levels of water requirement that may be met in terms of numbers of irrigations or other approximations to volumetric deliveries. In order to estimate the amount of water required within the Association's area before the season begins, the Association should estimate crop water requirements adjusted for conveyance losses to arrive at the targeted fields. Specification of farm locations where each type of crop will be planted is necessary in order to plan water delivery schedules accordingly.

4. The ISP should state clearly how water is to be allocated among farms, the water distribution method to be used, and how water deliveries may be ordered, scheduled and prioritized (such as giving priority to household gardens). This could be a two-stage method where water is distributed to zones and then within zones. The ISP should state how the water delivery schedule will be organized and what it should include, such as dates, rate of flow (all the water in the canal or shared during a turn), duration of turns and time between each delivery.
5. The ISP should state whether water will be required and permitted for non-farm uses such as household gardens, forestry, drinking water supply (after filtering), fish ponds, cloth washing, bathing cattle, etc.
6. The Association should have a method to conserve water if the actual supply during the season falls short of what was expected. This might be staggered planting dates (to stretch out the time when maximum water demands will occur), irrigation rotations, or shortening of irrigation turns.
7. The ISP should state when drying may occur, such as to increase root penetration, for temporary drying connected with application of fertilizer or pesticide, for end of the irrigation season or for special maintenance along certain reaches of canals.
8. The ISP should explain briefly how drainage will be implemented and what actions to regulate it may be needed under certain conditions.
9. There may be a need in some Associations to monitor and control water quality, such as to prevent entry of contaminants, etc. What should be done during the course of the season should be specified. This is of particular concern where water at the tail end of canals and in the drainage system is used for drinking.
10. The ISP should specify clearly how water deliveries and drainage will be managed, including who will do what, when and how.
11. The ISP should also specify the type and number of Association staff assigned to what operational functions and locations.

2.3 OUTPUT

The output of this section of the ISP will be a clear plan for how and when water will be acquired for the Association, how and when it will be distributed among blocks or zones within the Association, how and when it will be delivered to zones and individual farms, and how water will be drained from fields and from the Association drainage network. **Annex 6** below provides

some background guidance for installing and using the appropriate water-discharge measurement device for an intake to a WUA service area.

3. MAINTENANCE AND PERIODIC REPAIRS AND IMPROVEMENTS

3.1 OBJECTIVE AND SCOPE

The Maintenance Section of the ISP should be based upon achieving the satisfactory standard of maintenance that was agreed upon and included in the first section of the ISP. This will include the minimum allowable condition for each type of structure.

Some Board and Management Unit officers should assess conditions of the various structures and the irrigation and drainage system as a whole during an annual walk through. They will inspect all canal sections and water control and measurement structures in order to determine what routine or special maintenance, repairs, improvements, replacements, or modernization may be needed on the bases of the agreed standards.

The Maintenance Section of the ISP will include routine maintenance, special or periodic maintenance, incidental repairs, improvements such as extension of a canal or installation of a drop structure, or some kind of modernization with a new type of structure. The ISP should include service specifications for maintenance, based on priorities related to what maintenance, repairs and improvements are required in order to achieve operational targets during the next irrigation season. An example of a worksheet for preparing the maintenance part of the Plan is found in **Annex 3** below.

3.2 STEPS FOR PREPARING ISP SECTION ON MAINTENANCE AND PERIODIC REPAIRS AND IMPROVEMENTS

Preparation of the Maintenance Section of the ISP will probably require the following steps.

1. Identify the location, type, and extent of routine and periodic canal cleaning to be done. This should include estimates of canal lengths where weeding is needed and the volume of silt to be removed from certain canal reaches. It should also include estimates of numbers of laborers, duration of work and special equipment that will be required, including an estimate of costs;
2. Identify the location, type, extent, and requirements for labor and materials, duration of work and special equipment for special repair works to be done, including an estimate of cost;
3. Greasing, painting and other maintenance requirements are specified for identified control and measurement structures, including an estimate of costs;
4. Proposals for incidental repairs and improvements, including any expertise needed, labor and equipment requirements and estimation of costs;
5. Type and number of Association employees assigned to maintenance functions and locations;
6. Volume of local materials to be contributed by Association members (such as sand, stones, brush, etc.);

7. Number of days of labor to be contributed for maintenance and repairs by members of the Association;
8. Plan for protection of canals and structures against damage by (wind) erosion, cattle, rodents, vegetative growth etc.; The Association should play a role to encourage a healthy 'riparian' environment, and prevent erosion, damage and excessive growth of grass;
9. The Maintenance Section should conclude with an estimation of total costs involved, a schedule for implementation and a proposed assignment of responsibilities for implementing maintenance. This may be a combination of hired labor and voluntary or customary agreed labor contributions of members and non-member water users;
10. When a special maintenance problem or need for a repair is identified, the Association maintenance officer records:
 - a. The structure,
 - b. Its location,
 - c. The problem,
 - d. What kind of repair work is needed and
 - e. Its approximate cost;
11. The officer should make a two-way ranking of the problem, each of which has three levels (numbered from 1 to 3, the higher the number the more important and urgent the work, the total score identifies priority);
 - a. The first type of ranking is about the importance of the repair, whether it is
 - i. High (3),
 - ii. Medium (2) or
 - iii. Low (1);
 - b. The second type of ranking is about the degree of urgency for making the repair, whether it requires attention
 - i. Immediately (3),
 - ii. Within the forthcoming season (2), or
 - iii. Within the next 2 or 3 years (1);

3.3 OUTPUT

The output of this section of the ISP will be a clear plan of what routine maintenance, other repairs will be done over the next year, who will implement each activity, when they will be implemented, and what is the relative priority.

4. GOVERNANCE AND MANAGEMENT SUPPORT ACTIVITIES

4.1 OBJECTIVE AND SCOPE

The main objective for this section of the ISP is to ensure that the Association's business is conducted according to just principles, laws of the Republic of Tajikistan, and the Association's Charter and By-laws. Governance and management support includes all activities that need to be scheduled and implemented under the ISP that concern key Association policy, plans and decision-making.

4.2 STEPS FOR PREPARING ISP SECTION ON GOVERNANCE AND MANAGEMENT SUPPORT ACTIVITIES

Governance and management support activities cannot be planned in accordance with a chronological set of steps. Rather, each item follows its own schedule for implementation. The ISP provides a schedule for when these activities will occur over the forthcoming irrigation season. Governance and management support activities may include the following activities. These are not listed in order of implementation.

1. Meetings of the Representative Assembly once or twice a year, one month before the irrigation season begins and about one month after the final harvest of the year. During these meetings the following actions may need to be planned to be taken:
 - a. Elections to be held;
 - b. Special decisions to be made by the Association;
 - c. Approval of the Irrigation Service Plan, including the budget and Irrigation Service Fee;
2. Association Board meetings to be held approximately weekly from one month before and one month after the irrigation or cropping season begins, and then monthly during the rest of the year; The Association Board oversees preparation of the Irrigation Service Plan;
3. Meetings at the Water Supply Agency office and in the River Basin Council (when this is established);
4. Meetings of the Audit Committee;
5. Meetings of the Dispute Resolution Committee;

Apart from the above meetings, other governance and management activities required are:

1. Dispute resolution requirements;
2. Schedule and tasks for Irrigation Management Audits (if done);
3. Training or capacity building to be arranged;
4. Activities for obtaining support services;

5. Other activities dealing with external relations;
6. Other administrative or reporting duties required;
7. Specification of the schedule for these activities and division of responsibility among Association officers and others for implementing all such tasks;

4.3 OUTPUT

The main output for this section of the ISP will be a schedule of all governance and management support activities required over the forthcoming year, including specification of all such activities and identification of who will implement them and when.

5. MONITORING MANAGEMENT PERFORMANCE AND ENVIRONMENTAL ASPECTS

5.1 OBJECTIVE AND SCOPE

This involves the needs to monitor and assess the quality of irrigation management performance, identify any needs to make adjustments in operations, maintenance, financial or managerial matters, and environmental concerns. Monitoring and performance assessment may become a routine aspect of what the Association does or it may be only intermittent and in response to external needs. Monitoring of performance will be important between the Association and the bulk water supplier in order to assess to what extent the service agreement has been implemented. It will also be important in order to assess to what extent the service by the Association (or its third party service provider) has been provided to Association members and non-member water users.

The following are examples of items that could be monitored by the Association.

1. Daily recording of water discharges through the offtake structure that brings water into the sub-system that is the jurisdiction of the Association. Where discharge measurement devices are not yet installed, simple records of full, half flow and no flow can be kept;
2. Weekly recording of water availability around the service area of the Association;
3. Collections of Irrigation Service Fees;
4. Expenditures of Association funds;
5. Complaints or disputes arising;
6. Results of Audit Committee investigations;

5.2 STEPS FOR PREPARING ISP SECTION ON MONITORING MANAGEMENT PERFORMANCE AND ENVIRONMENTAL ASPECTS

Monitoring and performance assessment may include the following steps.

Identify what aspects will be monitored in order to assess outcomes of service agreements, and who will do the monitoring, how and when results will be reported;

1. Identify what environmental concerns will be monitored and how so;
2. Identify what other aspects should be monitored, and who will do the monitoring, how and when results will be reported;
3. Arrangements for discussing results of monitoring and performance assessment and making decisions whether to make any adjustments in the Irrigation Service Plan or anything else;

5.3 OUTPUT

The output will be the section of the ISP that specifies what aspects of Association governance, irrigation service delivery (through agreements) and financing will be monitored, methods to be used, assignment of responsibilities and schedule for monitoring activities and discussions of results.

6. RECORDING AND REPORTING

6.1 OBJECTIVE AND SCOPE

This includes keeping a record of all essential information, from meetings, water discharges, water availability on farms, etc. It also includes making and submitting reports on the Association's business to the Basin Water Supply Agency or other authorities as may be required.

6.2 STEPS FOR PREPARING ISP SECTION ON RECORDING AND REPORTING

The following is a list of potential items to be recorded and reported.

1. Keeping agendas and minutes of the Association Representative Assembly (or Council of Representatives) are essential. These should include a record of participants, issues discussed, decisions taken, and action items to be done. The minutes should be approved and signed by the Chairman of the Board and possibly discussed and adopted by the Representative Assembly during the next meeting;
2. Keeping agendas and minutes of the meetings of the Board of Directors are essential. These should include a record of participants, issues discussed, decisions taken, and action items to be done. The minutes should be approved and signed by the Chairman of the Board and discussed and adopted by the Board during the next meeting;
3. Keeping agendas, minutes, and reports of the Audit Committee meetings, these should include a record of participants, issues discussed, decisions taken, and action items to be done. Minutes and reports should be signed by the Chairman of the Audit Committee and Deputy Chairman of the Board and discussed and adopted by the Committee (possibly including observations from the Representative Assembly) during the next meeting;

4. Keeping agendas and minutes of the Dispute Resolution Committee meetings, these should include a record of participants, issues discussed, decisions taken, and action items to be done. Minutes should be signed by the Chairman of the Dispute Resolution Committee and the Deputy Chairman of the Board; discussed, and adopted by the Committee (possibly including observations from the Representative Assembly) during the next meeting;
5. Prepare an annual monitoring and evaluation report based on of the monitoring activities and request feedback. Probably the pre-season Representative Assembly would be the most appropriate body for the presentation and approval;
6. Special reports to the Basin Water Supply Agency and local authorities, as needed;

6.3 OUTPUT

The output is a plan for all records to be kept and reported within the Association during the forthcoming year.

7. PREPARATION OF A PERFORMANCE-BASED BUDGET, SETTING THE IRRIGATION SERVICE FEE AND MEMBERSHIP FEE, AND FINANCIAL MANAGEMENT

7.1 OBJECTIVE AND SCOPE

The Irrigation Service Fee is based on preparation of a budget for what is required in order to implement the Irrigation Service Plan (including water acquisition, delivery and drainage, maintenance and supporting management activities) of the Association for one year. It should include a brief statement about how costs were estimated through technical norms (optimal O&M targets) and financial norms (efficient and optimal unit costs and amounts).² A brief explanation of technical and financial norms is included in Annex 5 below.

This section of the ISP also involves specification of the Irrigation and Drainage Service Fee, with justification for how the amount was arrived at. It should include a description of how the IDSF will be collected, recorded, and deposited into a bank account. The budget will show how the funds will be expended. This section should also mention essential financial management procedures that will be followed.

A budget is only a best estimate of resources that will be required. Many things can happen to make the budget inaccurate, including unexpected damages to structures that require repair work during the season, extreme weather conditions, inflation, etc. Close monitoring and review of the ISP versus expenditures will give the Association better grounds for preparing the budget after two or three years of experience. It may also be wise to include a contingency fund of five to ten percent for unexpected costs, if it is possible to persuade farmers to do this.

The following is a list of potential items for expenditures that could be included in the budget.

1. Internal operating costs

² See Annex 1.

- a) Costs of water delivery and drainage, including staff and transportation;
 - b) Routine and periodic maintenance and repairs;
 - c) Paid staff: Manager, Accountant, Cashier, Engineer, Association Mirops;
 - d) Association office costs (phone accounts, postage, stationery, production of forms, photocopying, printing, etc.);
 - e) Meeting costs (transport, consumables, honoraria);
 - f) Costs to collect fees;
 - g) Monitoring and reporting;
 - h) Legal fees;
 - i) Repayment of loans;
 - j) Taxes;
2. Purchase of bulk water supply
- a) Purchase of seasonal bulk water supply for the Association;
 - b) Obtaining drainage rights;
 - c) Other payments;
3. Capital investments
- a) Construction works;
 - b) Purchase of office furniture;
 - c) Purchase or rent of vehicles and equipment;
 - d) Payment into a Capital Reserve Fund;

The Accountant and Manager should estimate amounts required for each of the above budget lines and then put them into a monthly cash flow forecast that will be presented to and approved by the Representative Assembly. If the cash flow falls below zero in any month then the Accountant and Association Board should adjust the timing of the planned expenditures or income. They may have to drop some expenditure for that year if necessary, such as periodic maintenance. Alternatively, they could arrange to have more of the work be done with communal labor contributions of Association members and non-member water users. Under some circumstances, it may be necessary to borrow money for the short-term. **Annex 4** provides an example of a worksheet for recording income and expenditures of the WUA.

The Membership Fee covers all establishment and fixed costs of the Association.

7.2 STEPS FOR PREPARING ISP SECTION ON PREPARATION OF A PERFORMANCE-BASED BUDGET, SETTING THE IRRIGATION SERVICE FEE AND MEMBERSHIP FEE, AND FINANCIAL MANAGEMENT

The Financial Management Section of the ISP may include the following aspects.

1. A performance-based budget for water delivery, maintenance, governance, and management support activities; This means that a pragmatic but sufficient standard of operations and maintenance and repair activities is identified and actual costs are estimated for an efficient volume of work and materials of sufficient quality;
2. Identification of what works will be done by staff hired by the Association, by a third party contractor, or by contributions of communal labor by Association members and non-member water users;

3. Calculation of the total cost of all operations, maintenance and managerial activities including supervision of works and quality assurance for the coming year;
4. Identification of any funds to be allocated by the Government or donors to the Association, if any;
5. A description of the basis for assigning labor and material contributions and water charge payments to individual members of the Association;
6. Setting the level of the Irrigation Service Fee and Members' Fee and determining how it will be assessed and collected;
7. Key financial management rules and procedures;
8. Preparation of a Membership Fee based on establishment and fixed costs divided by numbers of members who will contribute;

7.3 OUTPUT

The output will be a budget, Irrigation Service Fee, Membership Fee, and specification of key financial management procedures.

CONCLUSION

There may be annexes that specify details about locations, design, costs of each repair work to be implemented, including the agreed quality standards, schedule of works, assignment of responsibilities, and any expert assistance required.

The Irrigation Service Plan should be signed and dated by all members of the Association Board. In addition, it should be noted on the last page the date when the Representative Assembly approved it.

Name of Irrigation System and Canal Sub-system:

Year:

*Note: Full or partial

ANNEX 2: WORKSHEET: IRRIGATION SERVICE PLAN, PERFORMANCE MONITORING

[illegible]

ANNEX 3: IRRIGATION SERVICE PLAN: WORKSHEET FOR MAINTENANCE PLAN

Name of Water Users Association:

Name of Irrigation System and Canal Sub-system:

Year:

Activities	Resources Required		Resources Available		Additional Requirements		Source of Funds&	Status of Work*	Date of Completion	Name of Supervisor
	Materials #	Labor %	Materials	Labor	Materials	Labor				
Routine Maintenance:										
1. Removal of silt										
2. Removal of vegetation										
3. Removal of silt										
4. Minor embankment strengthening										
5. Clearing and oiling of shutters										
6. Painting of hoist and gates										
7. Cleaning of inspection path										

Incidental Repairs										
8. Construction of new structures										
9. Enlarging or adding canal										
10. Major embankment strengthening										

= Materials with amount required or total cost of purchasing these materials. % = Man-days, which number of labor per day times days required.

& = Source of funds to buy materials and hire labor. * = Deferred, on-going or completed.

ANNEX 4: IRRIGATION SERVICE PLAN: WORKSHEET FOR FINANCIAL RECORD

Name of Water Users Association:

Name of Irrigation System and Canal Sub-system:

Year:

Date	Activity/ Item	Income					Expenditure					Balance
		Unpaid Labor	Membership Fee	Other fees/cash	Materials	Total*	Labor	Materials	Services	Supplies	Total*	

*Total is given in the market price for all items.

ANNEX 5: EXPLANATION OF METHOD FOR DETERMINING TECHNICAL AND FINANCIAL NORMS FOR PERFORMANCE-BASED BUDGET

This note suggests how a Water Users Association (WUA) could prepare an Irrigation Service Plan to provide services to its water users. This is in accordance with accepted service standards, efficient and optimal costing, performance-based budgeting, and agreed irrigation service fees paid by water users. The Irrigation Service Plan is prepared by the WUA to specify its forthcoming objectives and actions for water acquisition, delivery, and measurement; maintenance and repairs; budgeting and financing; meetings; performance monitoring; and reporting. The objective is to have a practical strategy for irrigation management performance that is based on desired service standards.

This approach reveals the actual cost of the irrigation system, which is the first step towards developing a realistic strategy to make irrigation systems become productive and sustainable. This note suggests essential steps towards identifying services needed, setting service standards, determining optimal resource requirements and financial standards, preparing an Irrigation Service Plan with a performance-based budget, and setting and collecting an Irrigation Service Fee.

Step 1: Define and agree on desired services. At the level of the irrigation system or irrigation sub-system for which the WUA or Federation of WUAs are responsible, the WUA or Federation of WUAs should define and agree with water users on what services will be provided to water users. Normally, this will include water delivery to water users, maintenance and repairs, and management support services. Water delivery may include water acquisition, conveyance, and water distribution. Maintenance may have routine or periodic aspects and may involve repairs and improvements. Management support services may include water measurement and reporting, performance assessment, dispute resolution, and recording meetings and other matters;

Step 2: Identify and agree on acceptable standards of service delivery. The Association should agree on operational definitions for satisfactory standards of irrigation governance, management (i.e., delivery of services and support services), and financing. These are carefully constructed statements about what the Association intends to accomplish with its Irrigation Service Plan. These are objectives that are stated in such a way that their achievement or non-achievement is measurable. This serves as a guide for the rest of the ISP, in that all targets and activities are planned to achieve these satisfactory standards;

Each type of service to be provided should have a measurable standard that is acceptable to all water users. These should be as concise and measurable as possible. For water delivery, the standard could be something like, "Provide X number of irrigations on time to farmers with a certain crop type or Deliver water to all fields in sufficient amounts, and at the requested time for land preparation, planting, blossoming/reproductive phase, etc." Phrases like "on time" and "in sufficient amounts" will need to have measurable and locally appropriate definitions given to them. For maintenance and repairs, the standard could be something like, maintenance and repair of all canals and water control structures to "prevent noticeable deterioration" or "to ensure functionality of all canals and structures." The standards should also include the definition of the grade of composite materials such as concrete and mortar and the quality of materials used (e.g. thickness of zinc coating on gabion wire). For dispute resolution, it might be something like, "to resolve all irrigation-related disputes within 5 days." For water measurement, it might be, "to measure and record water discharge into the on-farm system each morning and

late afternoon.” In each case, it should be possible to measure and record whether the service was provided or not;

Step 3: Identify type of work, tasks, and volume of work requirements Estimate the type and volume of works to be done for maintenance in order to ensure that required operational functions will be feasible. This includes identifying the canal sections where grass removal will be needed. It will involve identifying the locations where silt removal from canals is needed, and identifying the approximate volume of silt to be removed by which types of equipment or labor. It includes estimating the locations and extent to which canal embankments will need minor repairs. It will include identifying what other routine maintenance will be needed, such as greasing gate stems, painting some structures, etc.;

Step 3 will also require estimation of what repairs are needed, which may require a walk-through of the sub-system that is under the responsibility of the Association. And identify the volume of materials that will be required, including sand, cement, stones, according to the quality as determined in step two. In addition, there may be costs for removal of material such as grass, bushes, etc. All such estimations should be based on accuracy, efficiency, and pragmatism. There should be no over-estimations. This should include the headwork, all canals, water control structures, and the drainage network for which the Association is responsible.

Step 4: Specify labor requirements. Identify the types of labor (Association staff, communal, temporarily hired) that will be needed, their numbers, and their costs. Also, identify all types of vehicles, equipment and tools needed and their costs—if they must be purchased, rented or used (with depreciation estimated). Also, identify the timing and schedule for all works;

Step 5: Agree on financial standards Identify all types of costs associated with governance of the Association, including costs of holding meetings of the Representative Assembly, Association Board of Directors, Audit Committee, Dispute Resolution Committee, etc. It includes costs for office supplies, communications, photocopying, collection of the Irrigation Service Fee, recording minutes of meetings, water measurement, and records, filing system, etc.

Norms include standards for the volume of tasks and other inputs required to achieve the agreed satisfactory standards. They also include standards for unit prices that will become building blocks for preparing pragmatic and transparent budgets. All estimation of types and volume of work and materials should all be based upon the principles of pragmatic and efficient estimates and costing. Best prices for acceptable materials and other resources should be specified in the form of acceptable unit rates and these should be updated in accordance with changing prices. Identify the best prices of unit costs for unskilled labor, skilled labor, various types of materials needed, etc. Then, estimate the total costs by multiplying the unit costs times the volume of each type of labor, vehicles or equipment to be used (rented, purchased, or used).

Regarding financial standards, this would include the best and most efficient costs of all units of inputs—labor, materials, equipment, etc. It would include specification of financial management practices and their costs, such as use of two witnesses for all transactions, use of receipts, running all revenue and expenditures through a bank account, and examination of all financial records by the Audit Committee quarterly and with a year-end report. It might include raising a capital reserve fund.

Step 6: Prepare an Irrigation Service Plan. The above objectives, standards, resource requirements, and prices have been specified as a general set of parameters that provide the

basis upon which Irrigation Service Plans, budgets and fees can be developed for specific years. The ISP will state the water acquisition, distribution and delivery activities, and their schedule for implementation and who will implement them. It will state all maintenance and repair works to be done during the year, their schedule for implementation and who will implement them. Likewise will be the case with management support functions;

Step 7: Prepare a performance-based budget. This budget will apply the volume of work and materials specifications and pragmatic unit rates that are mentioned above, adjusted for a specific year's ISP. The budget will be the actual efficient cost required to implement the ISP;

Step 8: Prepare and collect an Irrigation Service Fee. In a normal and simple situation, the Irrigation Service Fee will be based on the actual cost specified in the budget. Then divided by the number of water users to receive the service and apportioned in accordance with the principle for assigning costs (by area served, amount of water received, number of irrigations, etc.). Where a government wishes to standardize the fee or water tariff we advise that the performance-based budget is still prepared in accordance with actual, scheme-specific requirements, and that the amount of the subsidy is also made known;

Step 9: Make a service agreement between the Water Supply Agency and the WUA. After the ISP has been prepared by the WUA for its internal use, the Water Supply Agency and WUA prepare a service agreement that specifies at least the following items:

- a) Volumes of water to be delivered to the headwork of the irrigation system or offtake into the on-farm sub-system;
- b) Schedule for delivery of certain volumes of water over the irrigation season;
- c) Obligations of the WUA, such as completion of pre-season maintenance works prior to first irrigation delivery date, submission of a copy of the ISP to the water supply agency prior to the beginning of the season;

The Water Supply Agreement can apply for a multi-year period, but each year an Annual Water Services Contract is prepared and signed between the Water Supply Agency at the river basin or sub-basin level and each WUA.

Step 10: Assess the extent to which key performance targets have been achieved. In order to determine at the end of the season whether agreed services were provided to the WUA by the water supply agency and whether agreed services were provided to individual water users by the WUA, an assessment should be made that is practical and objective. The assessment should be made in a way that is acceptable to both parties and appropriate for local circumstances. Performance targets should be made for water supply delivery, maintenance, and financial cost recovery;

Step 11: Make adjustments in end-of-season service fee payment requirements in accordance with the extent to which agreed services were provided. In order to enable service agreements and payments of the Irrigation Service Fee to have the most positive effects for incentives and accountability we recommend making this linkage. The water supply agency will have the incentive to provide the agreed service in order to ensure full payment of revenues. Likewise, the WUA will want to ensure agreed water deliveries to all water users so that it can expect to receive full payments of the Irrigation Service Fee;

ANNEX 6: OPTIONS FOR WATER FLOW (DISCHARGE) MEASUREMENT OR ESTIMATION

OBJECTIVE AND SCOPE

Water flow or discharge measurements are needed to determine the volume of water supplied by a service provided (in this case by the Agency for Land Reclamation and Irrigation to a client (in this case the Water User Association), or of the return flow (drainage) received from the client. Internally in the WUA discharge, measurements are needed to monitor the water distribution within the WUA covered area and to the water supply from the WUA to its members.

The appropriate method depends on the method of water supply, by gravity or lifted by pumps; for gravity systems we need to know the size of the canal or drain, the slope of the canal or drain, the material of the canal or drain and the quantity of water. For pumped systems the power consumption, the height of the lift and the efficiency of the pump and pipe resistance determine the discharge.

There are a large number of discharge measurement devices, from permanent weirs that create critical flow conditions in large canals to portable flumes that can be installed in field ditches. For a WUA it might be most practical to have permanent measurement devices installed at the critical distribution points and possibly one or two small flumes to check flows in field channels and drains.

Discharge measurements are most difficult in flat areas, because the water needs to flow freely in order to get a reliable measurement. In flat areas, small obstructions leading to increased water levels below the measuring point often reduce the flow velocity and the relation between water level above a reference point and the corresponding discharge is disturbed. This is referred to as backwater effect. Due to the position of various hydro-posts (or staff gauges), generally consisting of a gauge in a small specially constructed square opening in the canal bank, the backwater effects here are considerable and the accuracy of measurement is low.

In Tajikistan, slopes are generally steep and locations with sufficient slope for accurate measurements can easily be found, where this is not the case, free flow conditions relatively can be imposed easily by decreasing the cross section in a flume or in a broad crested weir.

Broad crested weirs are generally the preferred option. These weirs do not require flow constriction and cause hardly any upstream effects and therefore they created limited disturbance upstream and negligible head loss.

Where gate structures are found at the desired measurement locations discharge can be calculated easily, where free flow conditions occur. The water level upstream in combination with the gate opening and the width of the gate(s) will give an accurate measurement of the flow. Where gates are not freely flowing, i.e. where the downstream water level influences the flow through the gate (backwater effect), the water level upstream and downstream of the gate have to be determined in combination with the gate opening and gate width. However, such measurements are much less accurate and alternative locations for measurements are preferred.

In pumped systems, a straightforward relation between discharge and power consumption can be determined through a number of flow metering sessions. The determined relation can then be used to relate the power consumption to the volume of water delivered.

STEPS TO IDENTIFY THE BEST DISCHARGE MEASUREMENT LOCATION, TYPES OF INFRASTRUCTURE OR EQUIPMENT AND TO START MEASURING AND RECORDING DISCHARGES

There are many factors determining the best discharge measurement infrastructure or equipment and it is impossible to make a classification method. Generally, it is best to use locally familiar infrastructure or portable flumes, as long as they create the desired free flow conditions.

Step 1: Determine the general locations where discharge measurements are needed to determine inflow into service areas, monitor flow distribution or determine drainage flows.

Step 2: Identify naturally occurring changes in slope and if possible locations of hydraulic jumps. These are the best locations for discharge measurement infrastructure.

Step 3: Determine size of canal and approximate discharge at the best location.

Step 4: For large flows in intakes and main or secondary canals, determine the best permanent structure to be constructed, or existing structure to be used or adapted. For smaller flows and in field channels, possibly portable structures can be used and a permanent marker can mark the location.

Step 5: Install easy to read, durable gauges, for example well painted cm scales protected by abrasion resistant, and Plexiglas. Various manufacturers can produce such gauges.

Step 6: Install the structure and calibrate the water level of installed gauges against a variety of flows, to either: 1) construct a calibration curve or 2) in case of a standard structure and known relation between water level and discharge. Then, verify this relation.

Step 7: Construct tables with water level-discharge relations based on of the calibration curve or standard relation for the structure and keep these at a safe place near the structure.

Step 8: Start regular measurements at least three times daily or per irrigation turn if shorter than a day and record the information on a monitoring sheet.

Step 9: Produce regular total volume overviews at the location, at a minimum for each period of 10 days, in terms of continuous flow or for each irrigation turn. Generally, the crop water needs are tabulated for 10-day periods as well;

Step 10: Compare the discharges to the operational plan and crop water needs and adapt if required.